

MARCH 19, 1990

**STRATEGIC  
DEFENSE  
INITIATIVE**

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**SDI**

Chronology  
1983-1990

**1983 MARCH 23, 1983: REAGAN ADDRESS ON STRATEGIC DEFENSE INITIATIVE (SDI)**

In an address to the nation, President Ronald Reagan announces his intention to commit the United States to a research program, consistent with the 1972 Anti-Ballistic Missile (ABM) Treaty, that will study the feasibility of defensive measures against ballistic missiles to maintain the peace:

"What if free people could live secure in the knowledge that their security did not rest upon the threat of instant U.S. retaliation to deter a Soviet attack, that we could intercept and destroy strategic ballistic missiles before they reached our own soil or that of our allies?

"I call upon the scientific community in our country, those who gave us nuclear weapons, to turn their great talents now to the cause of mankind and world peace, to give us the means of rendering these nuclear weapons impotent and obsolete.... I am directing a comprehensive and intensive effort to define a long-term research and development program to begin to achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles."

**APRIL 22, 1983: SOVIET SCIENTISTS DENOUNCE U.S. SDI PROGRAM**

A letter to the *New York Times* denouncing SDI is signed by more than 200 senior Soviet scientists, a number of whom have been instrumental in the development of Soviet advanced ballistic missile defensive systems. Yevgeniy P. Velikhov, for example, has been a central figure in the U.S.S.R.'s program to develop high-energy laser weapons.

**OCTOBER 1983: RECOMMENDATIONS OF THREE SDI STUDIES**

The findings and recommendations of three studies ordered by the President are delivered. The Defense Technology Study, focusing on the technical feasibility of a defense, concludes that "powerful new technologies are becoming available that justify a major technology development effort offering future technical options to implement a defensive strategy." The study recommends a five-year program to determine the technical feasibility of future ballistic missile defenses and proposes \$26,000 million for this effort.

The two Future Security Strategy Studies explore the strategy and policy implications of a strategic defense. The studies conclude that effective U.S. defense systems can offer a new, more stable and secure basis for managing our long-term relationship with the Soviet Union.

**1984 JANUARY 1984: ORGANIZATION FOR SDI PROGRAM CREATED**

The Strategic Defense Initiative Organization (SDIO) is created to undertake a "comprehensive program to develop the key technologies associated with concepts for defense against ballistic missiles."

The SDIO charter notes that the technology plan identified by the Defense Technology Study and the policy approach derived from the Future Security Strategy Studies will "serve as general guides" for the program.

**JANUARY 23, 1984: SOVIET NONCOMPLIANCE**

President Reagan's first report to Congress on "Soviet Noncompliance with Arms Control Agreements" finds that:

- The large phased-array radar under construction at Krasnoyarsk constitutes a violation of legal obligations under the ABM Treaty of 1972; and

- This and other ABM-related activities suggest that the U.S.S.R. may be preparing an ABM defense of its national territory.

These findings are reaffirmed in subsequent reports sent by the President to Congress.

#### **FEBRUARY 1984: SDI BUDGET, PROGRAM SUBMITTED TO CONGRESS**

The first SDI budget and program are submitted to Congress.

#### **MARCH 1984: OBJECTIVE OF U.S. SDI PROGRAM**

The U.S. Department of Defense booklet, "Defense Against Ballistic Missiles," makes clear that the "essential objective" of SDI is to "diminish the risk of nuclear destruction and to provide for a safer, less menacing way of preventing nuclear war in the decades to come."

#### **APRIL 15, 1984: ABRAHAMSON BECOMES SDIO DIRECTOR**

Lt. General James A. Abrahamson becomes the Director of the Strategic Defense Initiative Organization (SDIO).

#### **JUNE 10, 1984: HOMING OVERLAY EXPERIMENT**

The Homing Overlay Experiment (HOE) successfully intercepts and destroys a mock ballistic missile warhead in the mid-course phase of its flight. This non-nuclear intercept is the first such experiment demonstrating the homing guidance system and the potential of kinetic energy weapons to destroy ballistic missiles and their warheads simply by colliding with them at great speeds.

HOE, managed by the U.S. Army's Ballistic Missile Defense Systems Command, represents a decade of research and development, data processing and optical technology. This experiment lays the foundation for the Exoatmospheric Reentry Vehicle Interceptor Subsystem, a technology being researched under the SDI program.

#### **DECEMBER 22, 1984: REAGAN, THATCHER ON SDI PROGRAM**

President Reagan and British Prime Minister Margaret Thatcher agree on the following four points at their Camp David meeting:

- First, the U.S. and Western aim is not to achieve superiority but to maintain the balance, taking account of Soviet developments;
- Second, that SDI-related deployment would, in view of treaty obligations, have to be a matter for negotiations;
- Third, the overall aim is to enhance, and not to undermine, deterrence; and
- Fourth, East-West negotiations should aim to achieve security with reduced levels of offensive systems on both sides.

#### **1985 JANUARY 1985: MEANING AND OBJECTIVES OF U.S. SDI PROGRAM**

A White House publication, "The President's Strategic Defense Initiative," explains the meaning and objectives of the SDI program:

- The SDI is a program of intensive research into advanced defensive technologies, with the aim of eventually eliminating the threat posed by ballistic missiles, of all ranges and armaments. The SDI is consistent with all U.S. treaty obligations, including the 1972 U.S.-Soviet ABM Treaty.
- The purposes of the SDI are to: strengthen deterrence and stability; fashion an environment that serves the security interests of the United States, its allies and the Soviet Union; and lower the level of nuclear weapons.
- Ballistic missile defenses would enhance deterrence by significantly increasing the uncertainty facing an aggressor and by reducing or eliminating the incentive for launching a first strike.
- Any effective strategic defensive system must be survivable and cost-effective.
- Together with air defenses, effective defenses against ballistic missiles would substantially lower the possibility of nuclear war. They would also provide protection against the accidental launch of such weapons, or deliberate attacks by irrational leaders.
- Should it prove possible to develop a highly capable defense against ballistic missiles, the United States would envision parallel U.S. and Soviet deployments with the outcome being enhanced mutual security and international stability.
- Unlike the current deterrent doctrine of nuclear retaliation, greater reliance on defensive systems would threaten no one.
- There are three major reasons why it is necessary to pursue the SDI:
  1. The Soviet Union's offensive and defensive buildup, which has upset the military balance in the areas of greatest importance during crises;
  2. The awesome destructive potential of nuclear weapons; and
  3. New technologies that may make effective non-nuclear defenses against ballistic missiles possible.
- The SDI research program is also a prudent response to the Soviet Union's activities in both traditional and advanced technologies for ballistic missile defense, including: the world's only operational ABM system; activities which violate or potentially violate the ABM Treaty, and which together suggest that the U.S.S.R. may be preparing an ABM defense of its national territory; and active research and development into advanced technologies, such as lasers and neutral particle beams (NPBs), for ballistic missile defense.
- A unilateral Soviet deployment of advanced defenses against ballistic missiles, together with massive Soviet offensive forces and impressive air and passive defense capabilities, would destroy the foundation upon which deterrence has rested.

## **FEBRUARY 20, 1985: CRITERIA FOR STRATEGIC DEFENSES**

In an address to the Philadelphia World Affairs Council, Special Advisor to the President, Paul Nitze, outlines and analyzes U.S. government criteria (survivability and cost-effectiveness at the margin) for judging the feasibility of strategic defenses. (See entry for June 1985.)

## **MARCH 18, 1985: U.S. INVITES ALLIED PARTICIPATION IN SDI**

Secretary Weinberger invites 18 allied governments to participate in the SDI program so that both SDI and Western security as a whole can be strengthened by taking advantage of allied excellence in research areas relevant to SDI.

## **JUNE 1985: MAJOR FEATURES OF SDI PROGRAM**

A U.S. Department of State Special Report on the SDI, based on a key presidential policy directive, outlines major features of the program:

- The aim of SDI is not to seek superiority, but to maintain the strategic balance and thereby assure stable deterrence. The SDI represents no change in the U.S. commitment to deterring war and enhancing stability.
- The SDI is designed to enhance allied security as well as U.S. security. The United States will continue to work closely with its allies to ensure that, as SDI research progresses, allied views are carefully considered.
- Research will last for some years. The United States will adhere strictly to the ABM Treaty and intends that the Soviets do so as well.
- The purpose of the defensive options the United States seeks is to find a means to destroy attacking ballistic missiles before they can reach any of their potential targets.
- The United States has no preconceived notions about the defensive options the research may generate. The United States will not proceed to development and deployment unless the research indicates that defenses will meet strict criteria of military effectiveness, survivability and cost-effectiveness at the margin.
- If and when U.S. research criteria are met, and following close consultations with U.S. allies, the United States intends to consult and negotiate, as appropriate, with the Soviets pursuant to the terms of the ABM Treaty, on how deterrence could be enhanced through a greater reliance by both sides on new defensive systems. It is the U.S. intention and hope that, if new defensive technologies prove feasible, the United States (in close and continuing consultation with its allies) and the Soviets will jointly manage a transition to a more defense-reliant balance.
- For the foreseeable future, offensive nuclear forces and the prospect of nuclear retaliation will remain the key elements of deterrence. Therefore, the United States must maintain modern, flexible and credible strategic nuclear forces.
- America's ultimate goal is to eliminate nuclear weapons entirely. By necessity, this is a very long-term goal, which requires, as the United States pursues its SDI research, equally energetic efforts to diminish the threat posed by conventional arms imbalances, through both conventional force improvements and negotiation of arms reductions and confidence-building measures.

## **SEPTEMBER 6, 1985: MID-INFRARED ADVANCED CHEMICAL LASER EXPERIMENT**

A ground-based, directed energy experiment using the Mid-Infrared Advanced Chemical Laser (MIRACL) device is conducted at the White Sands Missile Range in New Mexico. The target, a Titan booster rigged to simulate a thrusting booster, is successfully destroyed by the laser. This is the first time in the SDI program that a laser destroys a ballistic missile's booster. It proves that liquid propellant ballistic missiles are vulnerable to attack by lasers.

#### **SEPTEMBER 27, 1985: DEMONSTRATION OF TRACKING WITH LASER**

The SDIO conducts the first successful demonstration of the ability to track a sounding rocket in space with a low-power, ground-based laser after adjusting the beam for atmospheric distortion. Using a low-power laser, the sounding rocket is tracked by a laser beam director at the U.S. Air Force Maui Optical Site in Hawaii. This is the first time a laser beam, adjusted for atmospheric distortion, is propagated from the ground into space.

#### **OCTOBER 4, 1985: U.S. DOCUMENTS SOVIET STRATEGIC DEFENSE ACTIVITIES**

The Departments of State and Defense jointly issue a report, "Soviet Strategic Defense Programs," which documents the extent of Soviet activities in all aspects of strategic defense, including passive defense, air defense, and both traditional and advanced technologies for defense against ballistic missiles. The report points out that Soviet efforts in most aspects of strategic defense have long been far more extensive than those of the United States.

#### **OCTOBER 11, 1985: REAGAN ON THE ABM TREATY AND THE SDI PROGRAM**

President Reagan determines the broader interpretation of the ABM Treaty to be fully justified. The President also directs that, as a matter of policy, the SDI program will continue to be conducted according to a more restrictive interpretation of the ABM Treaty than the United States could justifiably observe.

Under the broader interpretation of the Treaty, ABM systems that are "based on other physical principles" (i.e., other than ABM interceptor missiles, ABM launchers and ABM radars), and including components capable of substituting for ABM interceptor missiles, ABM launchers or ABM radars, may be developed and tested but not deployed, regardless of their basing mode.

Under the more restrictive interpretation, development and testing of ABM systems based on other physical principles are allowed only for fixed land-based systems and components.

#### **OCTOBER 14, 1985: SDI PROGRAM IS CONSISTENT WITH ABM TREATY**

Addressing a North Atlantic Assembly meeting in San Francisco, U.S. Secretary of State George Shultz says the SDI program "is and will continue to be consistent with the ABM Treaty."

He adds: "Because of the great potential contribution that SDI could make to our security, and because of our interest in a rigorous implementation of the ABM Treaty by both sides, we have devoted much attention to the question of how to interpret the Treaty. It is our view, based on a careful analysis of the Treaty text and negotiating record, that a broader interpretation of our authority is fully justified." This, however, Secretary Shultz says, is a moot point because the SDI research program has been structured and, as the President said, will continue to be conducted in accordance with a restrictive interpretation of the ABM Treaty's obligations as long as the United States can meet the program's objectives.

#### **DECEMBER 1985: SDI RECOMMENDATIONS OF EASTPORT STUDY GROUP**

The Eastport Study Group, formed "to devise an appropriate computational/communications response to the (strategic defense battle management) problem and make recommendations for a research and technology development

program to implement the response," issues its report to General Abrahamson. The report concludes that "computing resources and battle management software for strategic defense systems are within the capabilities of the hardware and software technologies that could be developed within the next several years." The report describes battle management and command, control and communications as the "paramount strategic defense problem" to be resolved. The report's conclusions agree with SDIO's assessments of the issues confronting the technology development program. SDIO formulates plans to implement the study group's recommendations.

#### **DECEMBER 6, 1985: U.S., U.K. SIGN MOU ON SDI RESEARCH**

The United States and the United Kingdom sign a Memorandum of Understanding on British participation in SDI research. This is the first agreement with an ally on SDI participation, following Secretary Weinberger's invitation of March 18, 1985.

#### **1986 JANUARY 15, 1986: SOVIET PROPOSAL TO ELIMINATE NUCLEAR WEAPONS**

Soviet General Secretary Mikhail Gorbachev announces a proposal which envisages the elimination of nuclear weapons over a 15-year period. The plan restates several Soviet proposals, including the elimination of offensive nuclear weapons contingent on banning research, development and testing of space-based missile defense systems. This is a continuation of Soviet efforts to kill or cripple SDI.

#### **FEBRUARY 26, 1986: SDI TO DESTROY MISSILES, NOT PEOPLE**

In an address to the nation, President Reagan says "We're pushing forward our highly promising Strategic Defense Initiative—a security shield that may one day protect us and our allies from nuclear attack, whether launched by deliberate calculation, freak accident or the isolated impulse of a madman. Isn't it better to use our talents and technology to build systems that destroy missiles, not people?"

#### **MARCH 27, 1986: U.S., FRG SIGN MOU ON SDI RESEARCH**

The United States and the Federal Republic of Germany sign a Memorandum of Understanding on the terms of West German participation in SDI research.

#### **APRIL-JUNE 1986: FLEXIBLE LIGHTWEIGHT AGILE GUIDED EXPERIMENTS**

A series of Flexible Lightweight Agile Guided Experiments (FLAGE) are conducted. These kinetic energy experiments demonstrate the guidance technologies necessary to intercept a warhead both in and beyond the Earth's atmosphere.

#### **MAY 6, 1986: U.S., ISRAEL SIGN MOU ON SDI RESEARCH**

The governments of the United States and Israel sign a Memorandum of Understanding on the terms of Israeli participation in SDI research.

#### **JULY 1986: PARTICLE BEAM EXPERIMENT**

SDI's first Particle Beam Experiment irradiates a miniature reentry vehicle with

a high-intensity proton beam. The results indicate that the explosive contained in the reentry vehicle is highly vulnerable to the particle beam.

#### **AUGUST 1986: U.S. REPORT EXPLAINS SOVIET ANTI-SDI CAMPAIGN**

"The Soviet Propaganda Campaign Against the U.S. Strategic Defense Initiative," is published by the U.S. Arms Control and Disarmament Agency.

It explains the methods of the Soviet anti-SDI campaign: to flood the West with statements from high Soviet officials; with interviews with Soviet spokesmen on Western broadcast media; and with newspaper articles, press releases, pamphlets, and petitions from front organizations and state-controlled Soviet scientific groups.

It also explains the goals of this campaign: to "stimulate opposition to SDI in the United States and other allied countries, inhibiting Western research and development into defenses—even as the Soviet Union forges ahead with its own ABM programs, including research and development in advanced ballistic missile defense technologies."

#### **AUGUST 6, 1986: SDI NOT A BARGAINING CHIP**

In remarks at a Washington briefing on SDI, President Reagan says "SDI is no bargaining chip, it is the path to a safe and more secure future...it's the number of offensive missiles that needs to be reduced, not efforts to find a way to defend mankind against these deadly weapons."

#### **SEPTEMBER 5, 1986: DELTA 180 EXPERIMENT**

The Delta-180 experiment obtains data for characterizing rocket plumes during the boost phase; studies rocket signatures during the close-in phase of a space intercept; and validates guidance laws using actual accelerating vehicles in space. The mission's results provide data critical to the development of small space-based interceptors.

The experiment utilizes an SDI satellite carrying a radar tracker and a rocket modified to carry advanced infrared sensors, the first laser radar ever flown in space, a Maverick air-to-ground missile infrared imaging system and two cameras. The target is intercepted at a closing speed of 6,500 miles (10,459 kilometers) per hour.

#### **SEPTEMBER 19, 1986: U.S., ITALY SIGN MOU ON SDI RESEARCH**

The United States and Italy sign a Memorandum of Understanding on the terms of Italian participation in SDI research.

#### **1987 MAY 21, 1987: FLAGE FOLLOW-ON TEST**

A FLAGE follow-on test is conducted at the White Sands Missile Range. The successful intercept demonstrates guidance technologies and accuracy required for the interception and destruction of a tactical ballistic missile within the atmosphere. The 12-foot FLAGE vehicle uses its millimeter-wave radar to lock onto the target, a U.S. Army Lance short-range missile. The onboard computer fires some 216 rocket motors, the size of a shotgun shell, in a collar behind the radar to move the speeding vehicle in the correct direction. The intercept takes place at an altitude of 3,658 meters (12,000 feet).



## **JULY 21, 1987: U.S., JAPAN SIGN MOU ON SDI RESEARCH**

The United States and Japan sign a Memorandum of Understanding on the terms of Japanese participation in SDI research.

## **SEPTEMBER 18, 1987: FIRST MILESTONE REVIEW**

Secretary Weinberger approves the recommendation of the Defense Acquisition Board (DAB) that selected SDI concepts and technologies enter the Demonstration and Validation phase of the defense acquisition process. The recommendation is based on a thorough review by the DAB of the SDI program's technical progress throughout the summer and a determination that several SDI technologies were sufficiently advanced to enter the next phase of research and development—the Demonstration and Validation phase. This is the first SDI milestone review and is a normal step in the Department of Defense acquisition process.

## **NOVEMBER 30, 1987: SOVIET ADMISSION OF SDI-TYPE RESEARCH**

In the first public admission by the Soviets that they are engaged in research similar to the U.S. Strategic Defense Initiative program, General Secretary Gorbachev says during a televised interview:

"Practically, the Soviet Union is doing all that the United States is doing, and I guess we are engaged in research, basic research, which relates to those aspects which are covered by SDI in the United States."

## **1988 JANUARY-DECEMBER, 1988: LIGHT EXOATMOSPHERIC PROJECTILE (LEAP)/SPACE-BASED INTERCEPTOR (SBI) MINIATURIZATION**

This research demonstrates the ability to:

- Develop lightweight, low-cost, exoatmospheric interceptors for a Strategic Defense System.
- Integrate advanced interceptor technologies developed in technology-based programs.

## **FEBRUARY 8, 1988: DELTA 181 EXPERIMENT**

A Delta rocket is launched from Cape Canaveral, Florida, with a payload of sensors and test objects. The sensor module deploys 14 test objects and, using an assortment of active and passive sensing instruments, characterizes the objects in a variety of space environments. Sensors also observe the launching of research rockets to collect data on rocket plumes.

The data gathered from this unmanned, orbital space mission will help in the design of sensors for a Strategic Defense System. The Delta 181 experiment also helps demonstrate that it is possible to discriminate between reentry vehicles and decoys with passive sensors.

## **MARCH 23, 1988: ANNIVERSARY SDI SPEECH/NATIONAL TEST FACILITY**

The fifth anniversary of President Reagan's landmark address to the nation announcing his intention of committing the United States to an SDI research program is observed. This program, consistent with the ABM Treaty, will study the feasibility of defensive measures against ballistic missiles.

The official groundbreaking for the construction of SDI's National Test Facility (NTF) is held. The NTF will serve as the coordinating point and hub for the various geographically remote facilities that will be linked electronically. These experiment and simulation facilities together constitute the National Test Bed (NTB).

The NTB program will provide the capability to compare, evaluate and test the alternative architectures proposed for a layered defense and its associated battle management and command, control and communications. The NTB will represent the major simulation activity for the SDI program.

**1989 JANUARY 31, 1989: MONAHAN BECOMES SDIO DIRECTOR**

Lt. General George L. Monahan, Jr. becomes the second director of the SDIO, succeeding Lt. General Abrahamson.

**FEBRUARY 1989: JANUS FLIGHT EXPERIMENT**

The Janus flight experiment succeeds in obtaining the first high resolution imagery of a post-boost vehicle (PBV) in space.

**FEBRUARY 9, 1989: PRESIDENT BUSH ON SDI**

President George Bush announces in an address to a Joint Session of Congress that he will "vigorously pursue the Strategic Defense Initiative."

**MARCH 23, 1989: U.S. COMMITMENT TO SDI**

On the sixth anniversary of President Reagan's landmark speech on SDI, Vice President Dan Quayle says the Bush Administration is committed to the development and deployment of a viable Strategic Defense System.

**MARCH 24, 1989: DELTA 183 (DELTA STAR)**

The Delta Star spacecraft carries aloft a laser radar and seven imaging sensors. Several sounding rockets are launched during the course of the experiment, enabling Delta Star's sensors to collect data characterizing their plumes.

Data collected by Delta Star will be valuable in designing and engineering a broad range of systems for a strategic defense, particularly space-based sensors and seekers on board kinetic energy weapons such as Space-Based Interceptors (SBI).

**APRIL 10, 1989: ALPHA CHEMICAL LASER**

The Alpha Chemical laser for the first time produces a high-power beam when fired in its ground test facility. This milestone in the space-based, chemical laser program will be used to validate the technology, computational methods, and fabrication processes necessary for scaling chemical lasers to power levels required for a strategic defense. Chemical space-based lasers are candidates for follow-on phases of a Strategic Defense System.

**APRIL 25, 1989: NO CHANGE IN U.S. GOAL FOR SDI**

Secretary of Defense Richard Cheney testifies before the House Armed Services Committee:

"The goal of the Strategic Defense Initiative remains unchanged. We will continue to pursue the general framework of both space- and ground-based defenses while providing the flexibility to adjust the specific deployment schedule as evolving technology is tested and proven. A restructured program would continue toward deployment of a system that will meet the requirements of Phase I by focusing on evaluating the potential of the most rapidly advancing technologies such as Brilliant Pebbles."

#### **APRIL 27, 1989: SBI HOVER TEST**

The first full-length laboratory flight test to demonstrate the technologies for a Space-Based Interceptor projectile is successful. This test integrates several key technologies and will facilitate development of an interceptor which could be used in Phase One of a Strategic Defense System.

#### **JUNE 1989: THUNDERBOLT ELECTROMAGNETIC LAUNCHER**

Several concept validation tests on the Thunderbolt Electromagnetic Launcher are successfully conducted. Of the 12 shots launched on this system, one projectile weighing 110 grams is propelled to a speed of 4.3 kilometers per second.

The final configuration of Thunderbolt could be capable of accelerating 100- to 200-gram projectiles at speeds greater than 14 kilometers per second.

#### **JUNE 15, 1989: U.S. SEEKS STABLE DETERRENCE**

In testimony before the Senate Armed Services Committee, a Bush Administration official says:

"The goals of SDI remain sound.... In pursuing SDI we do not seek superiority, but to maintain the strategic balance and place deterrence on a more stable basis.

"Pursuit of a robust SDI program provides a hedge against any near-term Soviet decision to expand rapidly its anti-ballistic missile capability beyond that allowed by the ABM Treaty.

"We will continue to vigorously pursue options for layered defenses composed of both space- and ground-based elements, recognizing that layered defenses offer substantial advantages in terms of defense effectiveness and imposing uncertainty on Soviet war planners.

"We will place emphasis on program flexibility and continue toward deployment of a system that will meet the requirements of a Phase One Strategic Defense System as those requirements have been defined by the Joint Chiefs of Staff by focusing on evaluating the potential of the most rapidly advancing technologies such as Brilliant Pebbles.

"The SDI program is to be conducted in full compliance with all U.S. international obligations, including the ABM Treaty."

#### **JULY 13, 1989: BEAM EXPERIMENT ABOARD ROCKETS (BEAR)**

SDIO successfully conducts the first test in space of a neutral particle beam (NPB) accelerator.

An NPB system is a candidate for follow-on phases of a Strategic Defense System, either to facilitate discrimination between targets and decoys, or as a weapon to destroy attacking ballistic missiles and their reentry vehicles.

#### **AUGUST 3, 1989: SBI ON-TARGET TEST**

Another increment in the laboratory flight tests demonstrating technologies for the Space-Based Interceptor projectile is successfully completed. The test vehicle hovers at a height of 9 meters (30 feet) while tracking its target: a solid-fuel rocket motor simulating a thrusting missile, operated in a stationary mode on the Edwards Air Force Base test range.

#### **AUGUST 23, 1989: IMPORTANCE OF EFFECTIVE DEFENSES**

Secretary of Defense Cheney says in Las Vegas, Nevada, that:

"An effective defense could be the single most important military bequest this generation could make to the future.... It no longer is visionary to think that a successful strategic defense could render our fears about a pre-emptive first strike obsolete. That is why President Bush committed himself to deploying SDI when it proves feasible."

#### **SEPTEMBER 12, 1989: SBI ON-TARGET TEST**

The final test in a series of laboratory flight tests demonstrating technologies for a Space-Based Interceptor projectile uses a new, super high-speed computer to demonstrate the detection and tracking capabilities of the test projectile.

During the test, a small infrared sensor views a stationary target plume while the computer analyzes the scene and commands the transfer of the aim point from the bright rocket plume to the missile body.

#### **SEPTEMBER 1989: JASON REPORT ON BRILLIANT PEBBLES**

The Jason study group's report on Brilliant Pebbles endorses continued research on the concept of small, lightweight, smart interceptors for defense against ballistic missiles.

#### **SEPTEMBER 20, 1989: DSB STUDY ON BRILLIANT PEBBLES**

In a study of the Brilliant Pebbles concept, the Defense Science Board (DSB) finds no fundamental flaws and pronounces the idea innovative. It predicts that two years of continued research would resolve remaining technical issues.

#### **SEPTEMBER 22-23, 1989: WYOMING MINISTERIAL**

In an effort to facilitate negotiation of confidence-building, predictability measures in the field of ballistic missile defense, Secretary of State James Baker invites Foreign Minister Shevardnadze to send a team of Soviet experts to visit two U.S. laboratories conducting SDI research.

#### **DECEMBER 14, 1989: SOVIETS VISIT SDI LABS**

Ten Soviet experts, led by Ambassador Yuri Nazarkin, Head of the Delegation to the Nuclear and Space Talks, visit the TRW Corporation's ALPHA laser facility at San Juan Capistrano in California, and the Beam Experiment Aboard

Rocker (BEAR) neutral particle beam facility at Los Alamos National Laboratory in New Mexico.

The Soviets see both the ALPHA laser, which will be launched into space as part of the Zenith Star space-based chemical laser experiment, and the BEAR neutral particle beam payload, which was launched into space and recovered in July 1989.

**1990 JANUARY 26, 1990: HEDI KITE 1 TEST FLIGHT**

The U.S. Army Strategic Defense Command and the SDIO successfully conduct the first in a series of tests of the High Endoatmospheric Defense Interceptor Kinetic Kill Vehicle Integrated Technology Experiment (Hedi Kite 1) at White Sands Missile Range, New Mexico. The KITE tests are designed to resolve critical technology issues related to the non-nuclear intercept of reentry vehicles within the Earth's atmosphere.

**JANUARY 31, 1990: FRANCE SIGNS MOA ON SDI RESEARCH**

The U.S. Department of Defense and the French Ministry of Defense sign a Memorandum of Agreement promoting Cooperative Programs on Free Electron Laser Technology.

**FEBRUARY 7, 1990: PRESIDENT BUSH ON STRATEGIC DEFENSES**

In remarks at the Lawrence Livermore National Laboratory in California, President Bush says that:

"Together with strategic modernization and arms control, programs like SDI—the Strategic Defense Initiative—and one of its most promising concepts, Brilliant Pebbles, complement our ability to preserve the peace into the 1990s and beyond...

"...Even as we work to reduce arsenals and reduce tensions, we understand the continuing, crucial role of strategic defenses. Beyond their contributions to deterrence, they underlie effective arms control by diminishing the advantages of cheating. They can also defend us against accidental launches—or attacks from the many other countries that, regrettably, are acquiring ballistic missile capabilities. In the 1990s, strategic defense makes much more sense than ever before..."

**FEBRUARY 14, 1990: LACE/RME SPACE EXPERIMENTS**

The first SDI long-term directed energy space experiments are launched from Cape Canaveral. The 30-month Low-Power Atmospheric Compensation Experiment (LACE) will measure the distorting effects of the Earth's atmosphere on low-power laser beams. The one-year Relay Mirror Experiment (RME) will demonstrate the relay element of a Ground-Based Laser (GBL) system and measure the accuracy of the system in pointing a laser beam uplinked from the ground to a space platform.